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## HIV infection and high risk behaviour among patients attending an STD referral clinic in Prague, Czech Republic

J Mikl, Z Sudar, P F Smith, M Bruckova, J Jedlicka, V Kastankova, R Tryzna, J DeHovitz

**Objective:** This survey was conducted to determine the prevalence of HIV infection and associated risk behaviour in a high risk population of clients attending an STD clinic in Prague, Czech Republic.

**Methods:** Between September 1994 and January 1995 clients entering the Apolinar STD clinic in Prague, Czech Republic, were enrolled in a blinded, unlinked HIV antibody seroprevalence study. Non-identifying demographic characteristics, STD diagnoses, HIV risk exposures, and voluntary HIV testing experience were extracted from medical charts.

**Results:** Of 1394 patients for whom serum was available for testing, one was positive for HIV (HIV prevalence 0.07%, 95% confidence interval (CI) 0.01, 0.41%). This person was one of 28 men having sex with men (MSWM) (HIV prevalence among MSWM 3.6%, 95% CI 0.6, 17.7%). Among the 775 male clients, 75.5% had heterosexual unprotected sex, 11.1% had sex with high risk partners or prostitutes, 3.6% were MSWM, 1.0% were injecting drug users (IDUs), 0.7% were both MSWM and IDUs, and 6.8% and 1.8% had other or no recognised risk for HIV/STDs, respectively. Among the 619 female clients, 74.5% had heterosexual unprotected sex, 11.6% were prostitutes, 7.8% had sex with high risk partners, 1.1% were IDUs, and 3.9% and 2.3% had other or no recognised risk, respectively. The 304 adolescent patients (age 11-19 years) differed significantly ( $p < 0.05$ ) in risk behaviour and STD diagnoses from the 1090 patients who were 20 years and older. Adolescents were significantly more likely to be female (58.6% v 40.5%, OR=2.1), IDUs (3.6% v 0.4%, OR=10.2), prostitutes (8.9% v 4.7%, OR=2.0), and have sex partners with STDs (7.6% v 4.4%, OR=1.8). The adolescent patients were also significantly more likely to be diagnosed with gonorrhoea (21.1% v 12.3%, OR=1.9) and non-gonococcal urethritis (27.6% v 17.2%, OR=1.8), and significantly less likely to have been tested previously for HIV (19.1% v 31.9%, OR=0.5).

**Conclusions:** HIV infection is currently uncommon in this population. However, the high rates of unprotected sex, prostitution, injecting drug use, and STDs, especially among adolescents, provide the basis for an epidemic in this population. Aggressive prevention education should be started before adolescence.

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New York State  
Department of Health,  
Albany, New York,  
USA  
J Mikl  
P F Smith

School of Public  
Health University at  
Albany, State  
University of New  
York, Albany, NY, USA  
Z Sudar  
P F Smith

National Reference  
Laboratory for AIDS,  
Prague, Czech  
Republic  
M Bruckova  
J Jedlicka

Apolinar Clinic,  
Prague, Czech  
Republic  
V Kastankova  
R Tryzna

State University of  
New York, Brooklyn,  
NY, USA  
J DeHovitz

Correspondence to:  
Jaromir Mikl, New York  
State Department of Health,  
Bureau of HIV/AIDS  
Epidemiology, ESP, Corning  
Tower, Room 772, Albany,  
NY, 12237 USA.

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## Introduction

Epidemics of HIV and sexually transmitted diseases have historically been associated with social and political change, especially drug use, poverty, and travel. In the Czech Republic major sociopolitical changes have occurred since 1989. Byproducts of these changes have included increases in commercial sex, drug use, and sexually transmitted diseases.<sup>1,2</sup>

In the Czech Republic, the first case of AIDS was diagnosed in 1984,<sup>3</sup> and the first case of laboratory documented HIV was diagnosed in 1985.<sup>4</sup> By the end of February 1996, 259 HIV cases had been diagnosed. As in other early European HIV/AIDS epidemics, the majority (54%) of the cases were homosexual/bisexual men, and 22% were acquired through heterosexual contact. Only 3% were injecting drug users (IDUs). Twenty three (9%) of the HIV positive cases were adolescents (10-19 years). Since 1993, the proportion of heterosexually transmitted HIV cases has increased nearly twofold, while the proportion among homosexual men has declined. The emergence of

this pattern poses particular risk for patients with sexually transmitted diseases, who are at both biological and behavioural risk for HIV infection.

We performed a cross sectional study of clients entering an STD referral clinic in Prague, Czech Republic between September 1994 and January 1995. The objectives were: to determine the seroprevalence of HIV antibodies in this population; to determine demographic characteristics of the clients including age, sex, ethnicity, and residence; to determine the prevalence of HIV risk behaviour and STDs in this population; and to ascertain the acceptability of voluntary HIV testing among these patients.

## Materials and methods

Between September 1994 and January 1995, 1500 consecutive clients entering the Apolinar STD clinic in Prague, Czech Republic, were enrolled in a blinded, unlinked HIV antibody seroprevalence study. Non-identifying demographic characteristics, STD diagnoses, HIV risk exposures, and voluntary HIV testing

Table 1 Characteristics of clients entering an STD clinic by age category. Prague, Czech Republic, 1994–5

Characteristic	11–19 years		20+ years	
	No	%	No	%
Sex:				
Male	126	41.4	649	59.5
Female	178	58.6	441	40.5
Risk factors for HIV infection*:				
MSWM	4	1.3	24	2.2
IDUs	11	3.6	4	0.4
MSWM and IDU	1	0.3	4	0.4
Prostitution	27	8.9	51	4.7
Men having sex with prostitute	3	1.0	46	4.2
Sex partner IDU	6	2.0	8	0.7
Sex partner with STD	23	7.6	48	4.4
Unprotected penile-vaginal	205	67.4	841	77.2
Other†	24	7.9	53	4.9
None reported	6	2.0	22	2.0
STD diagnoses*:				
Serological diagnosis of syphilis	3	1.0	27	2.5
<i>Neisseria gonorrhoeae</i>	64	21.1	134	12.3
<i>Chlamydia trachomatis</i>	84	27.6	188	17.2
Genital herpes	4	1.3	20	1.8
Other genital ulcers	5	1.6	34	3.1
Other‡	141	46.4	612	56.1
None	42	13.8	144	13.2
Acceptance of HIV testing:				
Before and during the study	56	18.4	333	30.6
Only during the study period	240	78.9	717	65.8
Only before the study period	2	0.7	14	1.3
Never tested	6	2.0	26	2.4
Total	304	100.0	1090	100.0

MSWM = men having sex with men; IDUs = injecting drug users.

\*Indicates prevalence of HIV risk factors and STD diagnoses. The number and percentages do not add up to the total number of clients and 100%, respectively, owing to multiple HIV risks and STD diagnoses.

†Includes patients self reporting promiscuity, transfusion recipients, rape victims, and individuals with tattoos.

‡Includes patients diagnosed with genital warts, pediculosis pubis, candidiasis, mycoplasma, ureaplasma, and *Gardnerella vaginalis* infection.

experience were extracted from patients' records.

Syphilis serological status was determined using the VDRL test, and for confirmation either the TPHA or FTA-ABS was used. The Gen-Probe Pace 2 system (Gen-Probe Inc, San Diego, CA, USA), a rapid DNA probe test using nucleic acid hybridisation was used to detect both *Neisseria gonorrhoeae* and *Chlamydia trachomatis* from female endocervical and male urethral swab specimens.

An aliquot of excess serum, derived from routine syphilis screening, was used for HIV testing. Serum samples were screened for antibody to HIV (type 1 and type 2) using an enzyme immunoassay (Fujirebio Inc, Tokyo, Japan). Replicate positive samples were tested by western blot assay (DuPont Pharmaceuticals, USA). A positive western blot was one showing the presence of any two of the p24, gp41, or gp120/160 bands; a negative western blot was showing no bands. Concurrent with their examination, all participating clients were offered an opportunity to consent to separate voluntary HIV testing.

We compared HIV risk, STD diagnoses, and acceptance of voluntary HIV testing for adolescent clients (11–19 years) with their older counterparts (20+ years).  $\chi^2$  analyses were used to compare group differences using SAS software package (Cary, NC, version 6.03). Odds ratios and corresponding 95% confidence intervals on factors associated with age were calculated using TRUE EPISTAT (Richardson, TX, version 5.0).

This study was reviewed and approved by institutional review boards at the National Institute of Public Health in the Czech Republic, the State University of New York Health Science Center at Brooklyn, and the New York State Department of Health in Albany, New York, United States.

## Results

Of the 1500 patients enrolled in the study, 106 patients were excluded from analysis because of lack of available serum for HIV testing. These patients were similar to the 1394 patients with serum, except that they were significantly more likely to be male (79.2% *v* 55.6%), to be tested for HIV previously (69.8% *v* 29.1%), and were less likely to have *Chlamydia trachomatis* infection (8.5% *v* 19.5%) (data not shown).

## DEMOGRAPHICS

During the study period, 775 males and 619 females were evaluated (table 1). The mean age of patients was 26.2 years (range 11–77 years); the majority of them were 20 years and older, Czech nationals (93.9%), and residents of Prague (81.7%) (data not shown).

## HIV INFECTION PREVALENCE

Of the 1394 patients with HIV test results, one tested positive for HIV. The HIV prevalence was 0.07% (95% confidence interval (CI)=0.01, 0.41). This person was one of 28 men having sex with men (MSWM); thus, the HIV infection rate among MSWM was 3.6% (95% CI=0.6, 17.7). The HIV positive person was 20–24 years of age from Prague, who was seen for treatment of gonorrhoea. He had had five sexual partners in the previous 12 months. During his examination he agreed to confidential, voluntary HIV testing. He reported being tested previously, outside of the study, for HIV antibody in June 1994 with a negative result.

## RISK BEHAVIOUR, STD DIAGNOSES, AND ACCEPTANCE OF HIV TESTING

In the overall sample (n=1394), 75.0% of the patients reported heterosexual unprotected sex, predisposing them to potential STD and HIV infections. Among the female clients, 11.6% self identified as prostitutes and 7.3% reported having a sexual partner with an STD. Among the participating male patients, 6.3% reported to be clients of prostitutes, 3.6% reported having sex with men, and 1.4% had sexual partners who were IDUs. The most commonly diagnosed STD was *C trachomatis* infection (19.5%), followed by gonorrhoea (14.2%). High acceptance (96.6%) of confidential, voluntary HIV screening was observed (data not shown).

## AGE GROUP DIFFERENCES

The 304 adolescent patients (11–19 years of age) differed significantly from the 1090 patients who were 20+ years of age. The adolescents were significantly more likely to be female (58.6% *v* 40.5%, OR=2.1), IDUs (3.6% *v* 0.4%, OR=10.2), prostitutes (8.9% *v* 4.7%, OR=2.0), to have a sex partner with an

Table 2 Bivariate analysis of factors associated with younger age among clients entering an STD clinic, Prague, Czech Republic, 1994–5

Characteristic	11–19 years (n=304)	20+ years (n=1090)	Odds ratios	95% CI
Female sex	178	441	2.1	1.6–2.7
Injecting drug use	11	4	10.2	3.0–38.2
Prostitution	27	51	2.0	1.2–3.3
Sex partner with STD	23	48	1.8	1.0–3.1
<i>N gonorrhoeae</i> infection	64	134	1.9	1.3–2.7
<i>C trachomatis</i> infection	84	188	1.8	1.3–2.5
Prior HIV testing	58	347	0.5	0.4–0.7

STD (7.6% *v* 4.4%, OR=1.8), and to be diagnosed with gonorrhoea (21.1% *v* 12.3%, OR=1.9) and *C trachomatis* infection (27.6% *v* 17.2%, OR=1.8). Adolescents were also significantly less likely to have been tested previously for HIV (19.1% *v* 31.9%, OR=0.5) (tables 1 and 2).

### Discussion

STD clinics are important sentinel sites for the surveillance of HIV infection because they serve people with sexual and often other risks, such as injecting drug use.<sup>5</sup> HIV seroprevalence in this high risk population was low, 0.07%. This is comparable with a previous 1991 study in which none of 245 patients tested was positive.<sup>6</sup> The high acceptance rate (96.6%) of confidential, voluntary HIV testing in this study is similar to that found in earlier surveys<sup>6</sup> performed in the Czech Republic.

Adolescent patients were more likely to be female, IDUs, prostitutes, and to have a sex partner with STDs. These findings may be because females become sexually active and engage in high risk behaviour at an earlier age than males.<sup>7</sup> We also found that adolescent patients were more likely to have *C trachomatis* and *N gonorrhoeae* infections than their older counterparts. These findings are consistent with the typical epidemiological pattern of these infections.<sup>8–10</sup> The high gonorrhoea and chlamydia rates in the adolescent clients (21.1% and 27.6%, respectively) are troubling because of the potential consequences, such as pelvic inflammatory disease and facilitation of HIV transmission. Further, while the incidence of *N gonorrhoeae* has been declining in the industrialised countries of western Europe since 1986 and in the United States since 1975,<sup>11–15</sup> it has been increasing in the former communist countries in eastern Europe.<sup>1, 2, 16</sup> *C trachomatis* is the most prevalent STD throughout Europe and the United States and its incidence is increasing throughout the world.<sup>11–15</sup>

The adolescents in our study were less likely to have been previously tested for HIV. We speculate that this is a function of age (less time for opportunity to be tested during their lives), but it might also indicate that they do not perceive themselves to be at high risk for HIV infection owing to lack of sufficient HIV related information.

Although blinded, unlinked surveys provide excellent estimates of HIV prevalence, our survey has limitations. Only one clinic was surveyed, thus it may not be representative of all STD clinics in the capital region of the Czech Republic; nor are the patients attending

this clinic representative of all those with STDs (for example, those seen by private physicians) in this region. Secondly, we had access only to information that was routinely collected by the clinics and available in the medical records. Finally, the completeness of risk behaviour information collected may have varied among physicians.

The political and subsequent socioeconomic changes in the Czech Republic since 1989 have resulted in increased travel, migration, and economic dislocation. This has led to dramatic increases in commercial sex and presumably is contributing to the rise in STDs seen throughout the region. The Czech health care system has also been transforming from a state owned service to individual (private) practitioners resulting in a potential decrease in STD reporting as well as partner notification. In response to the growing problem of STDs and HIV there has been an increase in preventive efforts within the educational curriculum. At the same time, Czech television and radio increasingly began to provide information to the country on both epidemics. Evaluation programmes need to be developed to assess their impact.

In conclusion, although HIV infection is currently uncommon in this population, unprotected sex, prostitution, injecting drug use, and STDs, especially among adolescents, provide a substrate for a potential dramatic increase in HIV infection. Aggressive steps should be taken to lessen the chance of HIV infection in today's adolescents and tomorrow's future adolescents.

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